3/7/89

John F. Mann, P.E.
Acting Chief
Engineering and Environmental Planning Branch
Department of the Air Force
Headquarters 375th Air Base Group
Scott Air Force Base, Illinois 62225

Dear Mr. Mann:

In accordance with our responsibilities under Section 309 of the Clean Air Act, the National Environmental Policy Act, and Executive Order 12088, the Region V Office of the U.S. Environmental Protection Agency has reviewed the Installation Restoration Program Remedial Investigation/Feasibility Study (RI/FS) Stage 1 Work Plan and Quality Assurance Project Plan (QAPP) for Scott Air Force Base.

In general, our concerns relate to the potential for degradation of air quality caused by the sites under investigation in the RI/FS Work Plan and the comprehensiveness of the QAPP. Our comments are highlighted below, and detailed comments are enclosed.

Considering the fact that approximately 10,000 people live and/or work at the base, we recommend that the Work Plan address air pollutants emanating from the landfill, Fire Protection Training Areas, and the spill sites. Two techniques are available for determining the concentrations of air contaminants, each having advantages and disadvantages. Ambient air monitoring requires long term sampling from various locations, specific meteorological data at the time of sampling, and sensitive instruments to detect low levels of air contaminants. This type of sampling provides very detailed information on the status of the air contaminants. Air modeling uses the known concentration levels from the soil and/or water at the site and annual meteorological data at the site to calculate air emission rates. This technique is less costly and labor intensive, but only provides an overview of the site conditions with no specific air sampling data. Using both of these techniques in conjunction at a site can help alleviate some of their respective disadvantages. The Air Force and the contractor should use both of these techniques and tailor their use to the particular site based on the type and amount contamination discovered. The Air Force must submit a plan for the selected sampling and analytical methods and modeling techniques to us before work begins at the sites.

The air data collected from this investigation will be necessary when the Air Force conducts the risk assessment for the air pathway. In addition, the remedial alternatives discussed in the Feasibility Study (FS) should be analyzed in light of any harmful exposure to toxic air materials, particularly for those alternatives which will have air releases.

In reviewing the QAPP, we have identified concerns regarding its organization and content. Information pertaining to a single element is generally scattered among many QAPP and/or Work Plan sections. It would be helpful to place this information in one central location. Information could be cross referenced. Generally, sections are either not referenced or information is missing. In addition, we recommend that target compounds be expanded in scope since information on these sites are based solely on the Record Survey and no analytical data.

Lastly, a Health and Safety Plan was not included in this draft of the QAPP but was included in Attachment 4 of the draft QAPP dated August 1987. The Health and Safety Plan should have been included in the most recent QAPP. In addition, a Community Relations Plan prepared by Installation Public Affairs Office is necessary to inform the public of the Remedial Investigation/Feasibility Study (RI/FS) activities at the base.

In the future, we suggest the Air Force not initiate field mobilization until after the USEPA has received the Work Plan and QAPP and had an opportunity to review the documents. In this instance, we received the documents 28 days after the expected mobilization date of October 3, 1988. Increased coordination will save all parties involved both time and money.

Thank you for the opportunity to review the RI/FS Stage I Work Plan and QAPP. If you have any questions concerning our comments, please contact Kathleen Warren of my staff at (312) 886-2442.

Sincerely yours,

William D. Franz, Chief
Environmental Review Branch
Planning and Management Division

cc: Sing Chia, AFRCE - Dallas, Texas
Ken Miller, IEPA

bcc: Mardi Klevs, 5AR-26
Kevin Boldger, 5SMQA

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V COMMENTS
SCOTT AIR FORCE BASE
RI/FS AND QAPP

AIR QUALITY

The air pathway for contaminants must be investigated due to the population at the base of approximately 10,000 people who live and/or work at the base. A map indicating the population breakdown of people living or working in each area of the base (housing and work areas) will be necessary in determining the exposure potential for the risk assessment of the air pathway. The Air Force should provide this demographic information for us and the contractor. The potential exposure to humans based on the demographic map and the amount of contamination detected in the initial stages of the investigation will determine the extent of air monitoring and/or modeling that will be necessary.

The contractor should perform a broad pollutant scan for organics, inorganics, inorganic acids, metals, fugitive dust emissions, and methane in the air around the landfill. Since several industrial contaminants were disposed in the landfill, a broad pollutant scan is necessary due to the nature of contamination. Considering the contamination at the Fire Protection Training Areas, and spill sites, the contractor could perform a less intensive pollutant scan tailored to the known contaminants at these sites. For example, organics, metals and fugitive dust emissions would be suspected air contaminants. Care in the selection of monitoring equipment should be employed. We suggest canister sampling with cryogenic analysis for determining the presence of Volatile Organic Compounds. However an analytical chemist should be consulted for the best sampling and analytical methods. The monitoring program must provide data that is statistically sufficient from various locations over a specified timeframe. Air dispersion modeling could begin as soon as the data is reported from the work this past fall which will determine the known contamination. If further investigation is necessary for the Remedial Investigation (RI) the air modeling may need to be altered due to the additional information on the contamination.

A distinction should be made between air data taken for occupational health and safety reasons and air data taken for ambient air sampling and modeling. Air sampling protocols developed for health and safety investigations are driven by the relatively high threshold limit values, which are much greater than ambient air health benchmarks. A substance can exist at very low concentrations in the ambient air, yet pose a significant public health problem due to extreme toxicity and long exposure. The organic vapor analyzer discussed in the Work Plan may be suitable for determining the level of personal protection needed or sampling locations, but will not be sufficient for measuring and speciating low levels of air toxics needed for the risk assessment. More sensitive instruments are required.

In particular, if the landfill at the base has been capped and vented, air samples should be taken from within the vent, otherwise perimeter ambient air must be sampled and speciated similar to the other sites.

In addition, volatile organic compounds in the groundwater may volatize in the air if it is used for showering on the base due to the associated warm temperatures and aeration. If contaminated water is used for showering, a risk assessment should be conducted for this pathway also.

In conclusion, after the ambient air data is collected from the monitoring and modeling program, a risk assessment should be developed for all the air pathways. The indicator chemical list should include any substances that are carcinogenic when inhaled, or present in ambient air in sufficient concentrations to pose a health problem, even if they do not need to be included from a water/ingestion health standpoint.

QUALITY ASSURANCE PROJECT PLAN

TITLE/SIGNATURE PAGE.

This section should clearly indicate that the signatures are for approval. Also, the date of the QAPP draft and a space for the dates of signature are needed.

1.2 PROJECT DESCRIPTION.

This section should address the following subelements: Site Description, Site History, Target Compounds, Project Objectives, Sample Network and Rationale, and Project Schedule. Where appropriate, sections of the Work Plan may be referenced to avoid reiteration.

Target compounds should be expanded in scope to include full organic and inorganic screening parameters (i.e., Contract Lab Program [CLP], Routine Analytical Services [RAS], organics/inorganics). Most of the known information on this site is based upon the Records Survey conducted for the HARM scoring. Since there is essentially no analytical data to narrow the selection of analysis types, we recommend that broad scan information be collected in this initial stage.

The Project Objectives section should have specific objectives, intended data usages, and data quality objectives (DQOs). The specific objectives may include information presented in Section 1.2.1. The intended data usages should relate all data types to these specific objectives. DQOs as presented in Section 1.4 do not address the level of quality.

The section on Sample Network and Rationale should clearly address the rationale, location selection, and number of sampling points selected. Tables should summarize all sampling efforts breaking down general location (i.e., Landfill, FPTA #1), matrix (water, soil boring, etc.), and analytical parameters/methods, number of field samples, duplicates, trip/field blanks, and total samples.

Diagrams of sampling locations may be referenced from the Work Plan. If exact locations are not known, a discussion on how they will be selected in the field (i.e., criteria for soil gas surveys) should be provided.

1.3 PROJECT ORGANIZATION AND RESPONSIBILITY.

The overall management responsibilities should be discussed. This section should include the U.S. Air Force Base personnel and regulatory agencies involved in the project.

The responsibilities of USEPA Region V will include review of the Work Plan and QAPP by the Environmental Review Branch, the Quality Assurance Section, and other media programs within Region V. Our Agency will most likely not initiate any field audits unless our project manager requests such an action. However, the U.S. Air Force may request that we perform this function. We recommend that external field and laboratory audits be included as Air Force responsibilities in this QAPP.

1.4 QUALITY ASSURANCE OBJECTIVES...

The QA objectives should not be the Data Quality Objectives (DQOs) themselves but the means to measure if DQOs are being met. Precision, accuracy, representativeness, comparability, and completeness will include QC acceptance criteria which needs to be met, which in turn will be major factors in reviewing DQOs.

This section frequently references to "CLP requirements" (i.e., section 1.4.2) while no CLP analytical protocols are included in the QAPP. Many of the referenced protocols are apparently based upon Resource Conservation and Recovery Act's (RCRA) Standard method SW-846. Quality Control (QC) acceptance criteria for precision and accuracy must be consistent with the methods capability and the site DQOs. In many cases, the Contract Laboratory Program (CLP) Routine Analytical Service (RAS) QC acceptance limits may not be applicable or appropriate for the referenced analytical methods.

Representativeness is described in Table 2 as the measurement of relative percent difference (RPD) of field duplicate results. Representativeness should measure whether the location and number of sampling points truly characterize a site. Field duplicate analyses are a measure of field sampling precision at a particular sampling point, not the entire site. Therefore, RPD should not be used to describe representativeness.

Completeness requirements of 100% may be unrealistic since this would indicate that all sampling points are critical and that valid data must be obtained for all analytical parameters at all points sampled. The QAPP appears to infer that not all samples are critical which would be in conflict with 100% completeness. In addition, the Stage 1 schedule does not include any provisions for resampling if less than required completeness is obtained.

Table 2 indicates that comparability will be accomplished using "standardized" methods. This should clearly indicate that the methods of sample collection/analysis will follow the referenced Standard Operating Procedures (SOPs) included in the QAPP.

1.5 SAMPLING PROCEDURES.

Much of the information on sampling is scattered between the QAPP (section 2) and the Work Plan (Section 5.0 & Attachment 2). In several instances the sampling plans are incomplete or contradictory. A separate Sampling and Analysis Plan which coherently addresses all sampling aspects would improve this QAPP due to the complexity of the number of sites, matrices, and analytical parameters encompassed.

The Sampling and Analysis Plan should include information on the selection of sampling locations for geophysical (Task 8) and soil gas (Task 9) survey data. Work Plan section 5.0 includes Figures 5-1 through 5-9 which appear to indicate pre-selected locations while grids for soil gas surveys are shown in Figures 5-10 through 5-14. This is inconsistent and should be clarified.

The soil gas survey will provide screening information for volatile organics. This screening may miss locations with high concentrations of inorganics or semi-volatile organics. Therefore, greater detail on the geophysical surveys should be provided concerning how grids are established, how reading will be taken within grids, the depths which will be covered, and how the soil gas survey will be designed to assure areas of higher concentrations will not be missed.

The rationale and ultimate purpose of background samples should be considered in the QAPP sections on Sample Network and Rationale. The description of what is a background sample must then be translated into the Sampling Procedures. The background sample should be representative of the matrix (i.e., soil, water) but there must also be assurance that it includes "natural" contaminant levels (i.e., well below any levels of concern).

The Sampling Procedures section should discuss how field duplicates and matrix spike/matrix spike duplicate samples will be collected, as well as the collection and preparation of field/trip blanks.

Specific details on collection of each sample matrix, from soil boring, well bailing, to placement in sample bottles, should be included. The QAPP sections on soil samples (2.4.2) and surface water/sediment sampling (2.4.4) provides insufficient information. This section should indicate how many subsamples will be collected, the depths, and whether they will be composites and/or grab samples.

It is recommended that the Air Force conduct additional physical characterization of soil borings (i.e., geological descriptions, permeability) since this type of data can be obtained from the borings. There is no indication that this type of data is already known and this may be useful for later remediation.

Decontamination techniques (QAPP Section 2.4.5) appear to be inadequate to avoid cross-contamination. The general technique described implies that decontamination ends with solvent rinse followed by air drying. Such a technique would leave residual contaminants for volatile analyses. Step-by-step "cook book" decontamination techniques should be included which will eliminate potential cross-contamination for all target parameters.

In the section on decontamination techniques a discussion on the steps that will be taken to ensure that sample containers are free of contaminants prior to sampling should be provided. In particular, QAPP section 2.4.6 does not discuss container preparation and QC checks/criteria on container lots.

1.6 SAMPLE CUSTODY

This section should discuss the numbering system that will used to differentiate samples by matrices (i.e., water, soil, sediment) and by type (i.e., field blank, trip blank, method blank, etc.), as well as to correlate samples with data entered in field logbooks.

The contents of the final evidence file and how long it will be retained, the sample custodian, and details of sample storage and disposal also needs to be outlined in this section.

1.7 CALIBRATION PROCEDURES AND FREQUENCY.

The referenced Laboratory QA Plan (Attachment 1) discussion of calibration needs clarification. It would be appropriate to include all analytical Standard Operating Procedures as an attachment to the QAPP and reference the sections on calibration. Laboratory analytical Standard Operating Procedure (SOPs) should reflect the laboratory's "cook book" for performing each analysis. Recommended elements of SOPs is included as an Enclosure.

Instrument operator manuals for all field equipment should be included along with any supplementary calibration procedures in SOP form as QAPP attachments. SOPs are particularly pertinent to instruments which will be used to select sampling locations and well placements. It should be recognized that there are significant differences between using field Gas Chromatograph (GC) equipment for Health & Safety purposes and for other uses such as location selection which impact RI/FS data.

1.3 ANALYTICAL PROCEDURES.

Analytical methods in the form of SOPs should be included and attached to the QAPP. The Table 5 listing of methods and their characterization as "officially approved EPA methods" is insufficient since the methods may either present options (i.e., internal or external calibration) or require additional detail. Analytical SOPs written by the contractor laboratory should reflect all details of a particular analysis as the laboratory shall perform it. Data should be included to support all required detection limits as validated by the laboratory using the analytical SOP.

The Air Force and the contractor should determine if selected analytical parameters and associated detection limits will be sufficient for potential ARARs for the site. For example, analyte lists may either be missing fractions or parameters (i.e., CLP RAS Target Compound List [TCL] semivolaties, pesticide/PCBs, selected volatile compounds on CLP TCL list but not in SW-846 methods). Also, the methods may include detection limits which could be higher or lower than required based on the ARARs. This must be carefully considered if all DQOs such as risk assessments may be completed using the stated analytes and detection limits.

There is no discussion of computer library searches on non-target volatile or semi-volatile compounds (i.e., CLP RAS Tentatively Identified Compounds). This data may be of particular importance for unknown non-target compounds observed in volatile/semivolatile organic fractions. This information may be needed in later stages for either the Feasibility Study and/or Remedial Action.

1.9 DATA REPORTING, VALIDATION, AND REDUCTION.

The data reduction section should provide additional detail on the laboratory procedures including methods used to reduce data, data transfer, records storage (i.e., archival of hard copy, magnetic tape storage of raw GC/MS data), how method/field/trip blank results are integrated into sample results, etc. Data reduction is a laboratory function and not the contractor's. The laboratory should reduce the raw, unprocessed data into the qualitative and quantitative results. The contractor's role is to validate, assess, and summarize the data.

Data validation should be addressed in this section, not section 1.13. The method to validate data is indicated to be performed in accordance with the "Functional Guidelines" documents. This may not be appropriate since all analytical methods appear to be based upon non-Contract Laboratory Procedures (CLP) methods. The QAPP should include a copy of ERM's data validation SOP.

Data reporting as referenced in Section 1.4.3 and characterized as Weston's "Level II data reports" may not be sufficient to perform a complete data validation or include all elements necessary to meet all DQOs. It is

inferred that data will be of known, acceptable quality and the data package may need all elements similar to a CLP RAS data package with associated chain-of-custody. The three types of available Weston data reports levels in Attachment 1 seems to indicate that the stated Level II report may be less than a CLP RAS data package with associated chain-of-custody. The QAPP should include full details of the data package and chain-of-custody as well as copies of the report forms.

1.10 INTERNAL QUALITY CONTROL

The samples collected and prepared to support the described Quality Control checks, should be discussed in QAPP sections on Sample Network and Rationale and Sampling Procedures.

1.11 PERFORMANCE & SYSTEM AUDITS.

This section addresses only internal field (by ERM) and laboratory (by Weston) audits. We recommend that the Air Force perform an external audit as an overview function. Field operations should be audited for adherence to QAPP/Work Plan specifications. Laboratories should be audited through review of SOPs, satisfactory completion of performance evaluation samples, on-site lab visits, etc.

Acceptance criteria for internal/external audits should be discussed between all of the parties involved.

In addition, the QAPP should specify which parties are responsible for overall management and will receive and review audit reports.

1.12 LABORATORY AND FIELD MAINTENANCE

Field Maintenance SOPs should be available and attached for all field instrumentation. These may be a section of the instrument operator's manual.

1.13 SPECIFIC ROUTINE PROCEDURES USED TO ASSESS...

This section should address how completeness will be calculated. QAPP section 1.4 should be referenced for examples of precision and accuracy required of data which will be used for field/lab measurements.

1.14 CORRECTIVE ACTION

This section should specify how all parties responsible for overall management (including the Air Force) will be incorporated into corrective actions. It appears that corrective action will be conducted without prior notification of overall management. Coordination is essential to avoid delays or additional cost to the government if the Air Force is notified after-the-fact.

1.15 QUALITY ASSURANCE REPORTS TO MANAGEMENT.

It should be clearly stated that all parties responsible for overall management will receive these reports. It is the Air Force's responsibility to review these reports. However the USEPA project manager should receive these reports for informational purposes. We recommend that if immediate corrective action is warranted, QA reports may be written as needed even if it is more often than bi-monthly.